LAND AND PROPERTY TAX ADMINISTRATION

A PROTOTYPE MANUAL

Republic of Armenia

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CONTENTS

I. INTRODUCTION

Although skeletal in content, this prototype manual for land and property tax adminis tration in the Republic of Arme nia has two objectives:

1) To guide the Republic of Armenia through the steps of administering the land and property taxes and of de veloping a modern fiscal cadastre.

2) To suggest the scope of a fully developed set of work ing manuals.

I envisage that the State Tax Inspectorate (or other agency responsible for property tax administration) would adapt this material to the needs of the country as legislative and norma tive decisions are made about Armenia's taxes on land, build ings, and other property. Some recommendations are presented in the context of the three-phase implementation plan present ed in Almy 1994a and Almy 1994b. Some observations about the current situation are set off in italics.

The manual's intended audience includes central, region al, and local level property tax administrators.

The general recommendations contained in this manual stem from materials previously written by the author, including un-attributed materials in Eckert et al. 1993 and OECD 1993 and OECD 1994.

II. MANAGEMENT

A. OVERVIEW

To achieve popular acceptance and other goals, tax sys tems must be well managed. Citizens hold tax administra tors account able for their performance. Managers in the State Tax Inspectorate must ensure that the staff complies with laws and regulations, adheres to policies, completes work on time, main tains standards of valuation accuracy, and uses resources wisely. To accomplish these things, managers must plan, budget, organize, control, and evaluate work.

B. PLANNING

Planning is a key aspect of sound management. The State Tax Inspectorate should engage in three types of planning: (1) strategic planning, (2) annual work plan ning, and (3) project planning. Plans are used to establish goals, objec tives, and timetables. Plans lay the foundation for budget requests. Plans provide a framework for measuring progress.

Plans should be written and briefly: (1) outline why the work in question is to be performed; (2) estimate the quantity of work to be performed; (3) state production standards for well analyzed, repetitive activities; (4) estimate personnel require ments; (5) estimate other resource requirements; and (6) schedule tasks and projects. After initial adoption, plans should be adjusted as needed to reflect changing circumstances, including limitations on available funding.

1. Strategic Plans

Organizations use strategic plans to shape their future. Strategic planning focuses on reinforcing strengths and elimi nating weaknesses. It clarifies expectations and standards. It assigns responsibilities. The State Tax Inspectorate should use strategic plan ning to design and ensure a success ful imple mentation of the new taxes on land and other proper ty.

Several Armenian organizations, including the AURI, the City of Yerevan Inventory Department, the Scien tific Research Center for City Management Systems, and the State Tax Inspectorate, demonstrate strate gic thinking.

Strategic plans are broad in scope and extend three to five years into the future. Strategic planning sets the stage for operational planning.

Top managers in the State Tax Inspectorate should be involved in the strategic planning process, because the plan must be "their" plan for it to succeed. This planning group or team understands the organization best, recognizes its potential and its limitations, can commit the resources re-

quired to carry out the plan, and can ensure that the plan is implemented successful ly.

The planning exercise should be participatory and develop a consensus as to strategic directions. In U.S. practice, a key event in the strate gic planning process often is a "re treat," during which the planning group (which should not exceed about twelve people) develops the statements discussed below. The management of the State Tax Inspectorate can develop the plan inter nally, using works from the exten sive literature on the subject as guides. Alternatively, many organizations use an independent outside "facilitator" to guide the planning pro cess. A facilitator can transcend the formal and informal power struc ture of the organi zation, has no role in past successes and failures, and has no direct stake in the outcome. The facilita tor can ensure that every member of the planning group has an opportu nity to partici pate.

Strategic planning begins with an attempt to answer the questions "What is the purpose of our organization?" and "What should it be?" From the answers to those questions will flow statements of goals and objectives, the development of strate gies, the commitment of resources, work assignments, and so on.

Stating the purpose of the property tax administration may not be straightforward. Those involved in the planning should consider such matters as the emphasis to be placed on providing a plentiful source of tax revenue, assuring taxpay ers that their valuations are correct and fair, and fostering a healthy market economy.

Strategic planning also requires an analy sis of the environ ment in which the organization operates. The purpose of the analysis is to identify problems and opportunities and to assess strengths and weaknesses. This analysis should consider such factual matters as legislation, work loads, economic and social trends, and current capabilities. It also should consider the values of the individuals in the system, because those beliefs can profoundly affect the level of performance that the administration can achieve or that tax payers will accept.

The result of the strategic planning process is the develop ment of a "mission statement" and statements of goals and objec tives. The strategic plan may also identify the activities and tasks that must be performed to reach the goals and objectives. Responsibilities are assigned, and timetables developed.

The mission statement succinctly describes what the organi zation wants to accomplish, for whom, and how. State ments of goals and objectives provide more detail. Goals may be general statements. Objectives should be realistically attainable and, most impor tant, measurable.

Progress should be regularly evaluated, approximately every three months. The strategic plan should be regularly updated, about once a year.

2. Annual Operational Plans

Annual operational plans support the strategic plan and are tied to the annual budget cycle. The annual operational plan addresses all aspects of the State Tax Inspectorate's operations. It contains information about objectives, activi ties and tasks, work loads, measures of performance, and resource requirements.

3. Project Plans

Project plans are operational plans that concentrate on a single general objective or a set of closely related objec tives. The period covered by a project plan depends on how long it will take to accomplish the objective. Project plans ordinarily are the most detailed.

C. ESTIMATING RESOURCE REQUIREMENTS AND BUDGETING

An important management responsibility is to obtain adequate resources for property tax administration. Budgets express resource requirements in monetary terms. Budgets should be linked to plans and be based on the results to be achieved, not the previous budget or the funds needed to maintain the existing bureaucracy. Budgets provide the funds needed to acquire required resources. Results-oriented bud gets strengthen accountability and protect against arbitrary reduc tions in funding.

Many factors affect funding requirements. Major factors are (1) work loads or required outputs; (2) inputs or resource requirements, including technologies; and (3) the wage levels and the costs of other goods and services.

Output estimates depend on work loads and desired service levels. Service-level decisions should be made during plan ning. (In the U.S., sometimes two or more service-level "packages" are proposed, each with estimates of the resources required to provide the level of service in the package in question. Budget ing officials select the service-level pack age that best fits the government's overall spending priori ties.)

Information on work loads (such as the number of parcels to be valued) can be obtained during the situation analy sis phase of planning. The state of the economy affects work loads, because high rates of population growth and new real estate development mean many new properties will be added to the proper ty tax rolls each year. Inspecting new properties is more expensive than making routine maintenance inspections, because of the amount of detailed information to be obtained and because of travel time between parcels. Similarly, sparsely populated areas with large parcels are more expensive on a per -parcel basis than more densely developed areas. Concentrations of commercial and industrial property also imply greater per-parcel costs. Rapid changes in prices and price levels imply shorter revaluation cycles.

D. PERSONNEL MANAGEMENT

Management is the art of getting work done through peo ple. Managers use their interpersonal skills to direct talent and energy of employees to achieve the organization's goals. Manag ers do this by knowing their employees, delegating au thority, expecting and rewarding excellence, encouraging teamwork and participation, and recognizing the power of self-motivation.

1. Organization

The staff of the State Tax Inspectorate needs to be effectively organized. The smallest component in the organi zational structure is a job, which is the group of tasks assigned to one person. A job has three elements: tasks, performance standards, and access to resources. Organization should be based on careful analysis of the volume of work, skills required, and realistic production rates. Effective organization of tasks and jobs increases efficiency. Effi ciency is obta ined when subordinates are accountable to only one superior and when gaps and overlaps in areas of authority are minimized. Efficiencies often can be obtained by special ization. Specialization can occur along functional and geo graphic lines. For example, the State T ax Inspectorate's central apparatus could be responsible for valuation model building and the regional offices could review the application of the models to individual properties. In general, the func tions per formed in the central appar atus should assist and con trol the regional offices. The regional offices would be responsible for day-to-day opera tional activ ities.

The organization plan should be documented with charts and statements of the responsibilities of each job and orga nizational unit. These formalize top management's delegation of work and suggest the lines of communication.

Management should monitor the organization for problems such as work bottlenecks, tasks that are not performed because every one assumes someo ne else is responsible for them, and duplication of work (beyond that necessary for quality con trol). If problems occur, reorganization should be consid ered.

2. Employee Selection

An important management responsibility is employee selec tion: finding the right person for each job. Selections are made with initial hirings and with promotions. Steps in the selection process may include a review of the job description, the identification of necessary and desirable qualifications, announcing open positions, reviewing applications, testing, selecting applicants for further consideration, interviewing leading applicants, and selecting the best applicants for each position. The selection process should be guided by formal policies and procedures to ensure the process is fair.

3. Employee Development

Although most employees will improve their skills by their own efforts, managers have an organizational responsi bility for employee

development. They use education, train ing, counseling, and performance reviews to identify talents and help employees grow in their positions and to become eligible for promotion.

4. Compensation

The State Tax Inspectorate should establish levels of compensation commensurate with the responsibilities and skills required of each position. In order for the tax admin istration to compete successfully for qualified employees, levels should be commensurate with levels offered elsewhere.

In my opinion, the salaries of public officials in Armenia appear to be too low to attract and retain qualified and ethical employees.

5. Internal Communications

A major management challenge is the creation of programs of internal communications that foster a emotionally healthy work place. Good internal communications begin with statements of goals, objectives, and values. General rules and policies should be in writing. The work involved in any regularly performed complicated task should be documented; steps should be described and illustrated. Expectations should be clearly communicated.

Responsibility for enforcement of policies and procedures should be appropriately delegated to all supervisors. Rules should be administered firmly but fairly. Lax compliance with rules reduce productivity and morale.

The program of internal communications should be continu ous with meetings, performance reports, progress reports on projects, and a policy newsletter. Frequent staff meetings allow for clarification and consistent understanding of expec tations. When polices or procedures change, employees should be informed of the need and reason for the change.

Employees need frequent performance evaluations. To be fair and effective, formal evaluations should be related to specific duties and performance standards. Formal evaluations should be documented in writing. Informal evaluations also are important. Problems should be identified and the employee counseled. Good performance should be recognized.

Discipline should promote behavior that achieves goals. It should be progressive, beginning with the least severe method for changing behavior and dismissal being the ultimate step.

Managers should realize that no behavior takes place in isolation, that behavior can rarely be attributed to a single cause, and that every action sets off a chain of reactions.

E. SYSTEM DEVELOPMENT

The management of the State Tax Inspectorate will have to develop and maintain computer systems. It will be a manage ment responsibility to ensure that these systems are well designed and implemented smoothly. Management should provide leadership and ensure that the system development process has adequate resources.

Major systems include management information, cadastral database management, computer-assisted mass valuation, and tax billing and collection.

System development involves the identification of user requirements and translating those requirements into software and related computer user procedures. Development also in volves deter mining hard ware requirements. The steps in the system develop ment process include:

- Definition of user requirements, which are stated as func tional specifications ——a modular design usually is best

- Determination of a system acquisition strategy ——the major options being the installation of a ready made system or developing a brand new system

- System installation and testing ——including user ac ceptance testing to ensure that the system meets functional re quirements before the system is put into operation

- Operation (preliminary phases include (1) data con version, (2) establishment of interfaces with other systems, and (3) training) and maintenance ——computer systems should not be viewed as static and unchang- ing. Requirements will change over time. Technolo gy will improve. Experi ence will in dicate aspects of the system that can be improved. The life expec tancy of the system will be in creased through a planned, ongoing maintenance process.

F. QUALITY ASSURANCE

Public acceptance of taxes on land and other property will depend on a perception that the taxes are fair. A per ception of fairness is reinforced when data are accurate, valuations appear accurate and uniform, and taxpay ers are treated without prejudice or favoritism. Quality assurance has to do with the systems and procedures that achieve these conditions.

The State Tax Inspectorate should strive for the high est feasible level of quality consistent with resources. It should do this through plan ning, continuous review, and cor rection as needed. Good management builds into every task a concern for quality. An organiza tional culture of public service and excel lence will ensure quality work. In short, public acceptance of the taxes on land and other property will depend greatly on the perfor mance of every member of the T ax Inspectorat e.

A quality assurance system can include the following elements:

- Staff selection and training
- Professional ethics
- Organization
- Computer system design
- Assessment standards
- Data edits
- Security procedures
- Ratio studies
- Appraisal reviews
- Procedural audits
- Effective communications
- Corrective actions
- Taxpayer feedback through objections and appeals

Armenia's needs will evolve over time. Until immovable prop erty markets become open and fully functional, little atten tion should be paid to ratio studies and other sophisticated measures of valuation accuracy.

Quality assurance has been incorporated throughout this manu al. This section addresses components of a quality assur ance system not dealt with elsewhere.

1. Professional Ethics

Valuation and property tax administration can present situations in which ethical guidance may be needed. Ques tionable or unethical conduct jeopardizes the integrity of property tax administration. The management of the property tax administra tion should require the staff to comply with formal ethical standards.

2. Assessment Standards

"Assessment standards" refer to the things necessary to ensure uniform treatment. Assessment stan dards work includes developing and maintaining procedural manu als, valuation manuals, a nd valuation standards (benchmark data), such as land unit values, typical rental property expense ratios, capi talization rates, and income multipliers.

Property tax administration involves many complicated tasks. The work involved in any regularly performed compli cated task should be documented. Steps should be described and illustrated in a procedural manual. The manual should be used in training programs.

Production standards are needed for planning and budget ing and for evaluating performance. Although the experience in other property tax systems can provide useful information, it is better to develop standards locally to account for the factors that affect production. Statistics on how time is used and on work accom plishments are needed to develop standards.

3. Security Procedures

Security procedures fix responsibility for work (that is, establish "audit trails"). They restrict access to manual and comput erized records to protect confidentiality, to prevent loss of records, and to prevent unauthorized changes in re cords. They protect against disasters. They also minimize opportunities for corruption (by rotat ing work assign ments and by designing procedures that prevent an individual from making and concealing an error).

An audit trail is a record of changes made to a record. It identifies who made the change (or the computer terminal used to make the change), when the change was made, and why. An audit trail makes it easier to recover from errors. It also makes it possible to isolate responsibility for errors or for fail ing to correct them. In turn, the cause of the prob lem can be identi fied. Mistakes will happen, but patterns of mistakes will identify more serious system problems.

Elements of an audit trail include computer sign -on and password procedures and requirements that paper forms be signed or initialed. Batches of forms should have transmittal sheets. At each successive stage of a process, work in the previous stage should be reviewed for completeness and accura cy before work is sent to the following stage.

4. Ratio Studies

A "ratio study" is a type of statistical analysis of value estimates commonly used in the United States. In a "ratio study," ratios of the value estimates produced by the property tax admin istration to independent indica tors of market value are calculated. Statistics describing the level and uniformity of the ratios are calculated. The State Tax Inspectorat e should institute regular ratio studies in phase 3 when immovable property markets are suffi ciently developed. Informa tion on the design of ratio studies can be found in Eckert 1990.

5. Procedure Audits

Procedures as well as results should be evaluated in a quality assurance program. While ratio studies and other exami nations of results can be used to identify any problems, they provide little information about the causes of problems. As the name implies, a procedure audit focuses

on practices and procedures. If procedures comply with requirements and standards, results can be presumed to be acceptable. In phase 3, the State Tax Inspectorate should establish a pro gram of procedure audits, perhaps conducted by an internal audit unit.

III. CADASTRAL RECORD SYSTEMS

A. OVERVIEW

This chapter mainly is about the creation of modern cadas tral record systems. However, I discuss implementation of phase 1 land and property tax systems in the next section.

Consistent with earlier recommendations in Almy 1994a, Hol stein 1993, and Mousheghian and Soghomonian 1994 (page 11), I visualize that the program to develop a modern fiscal cadas tre will run parallel to and be coordinated with the program to create a legal cadas tre. The systems will share maps and have a common cadastral numbering system.

1. Phase 1 System

In phase 1, "cadastral" record system development largely would be restricted to the activities associated with the regis tration of subjects and objects. Procedures for regis tering objects and sub jects should address:

- Forms (assessment notices, tax returns, and tax bills) and instructions
- Assessment notice and tax bill distribution strate gy
- Form processing procedures
- Acquisition of agricultural cadastral data
- Acquisition of information from inventory offices on privately owned property
- Acquisition of other lists of taxpayers

Mousheghian and Soghomonian (1994, section 6.3) visu alize a paper-based system consisting of a sin gle registration card containing the information needed for both the legal and fiscal cadastre. The proposal is better suited for the initial-phase "cadastre" rather than the modern cadaster discussed below. The contents of the card should be studied further.

2. Modern Cadastral System

Major objectives of phase 2 should be (1) the design a modern comput-erized cadastral system and (2) the completion of a preliminary version of the system. The system would consist of cadastral maps, a cadastral numbering system, and the following regis ters: a taxpayer register, a land register, a building register, a movable prop erty register, and a sales register (all of which are discussed below).

The scope of wo rk to develop cadastral record systems includes:

- Starting cadastre
  - Guidelines for establishing urban parcel bound aries
  - Compilation of provisional cadastral maps
  - Establishment cadastral numbering system
- Property records
  - Selection of characteristics to be maintained, development of codes, and the like
  - Data collection strategy, input from existing data, tax return, field canvass, or combi nation
- Ownership/taxpayer records
- Sales and market data
  - Sales data collection procedure
  - Sales validation procedure, coding, etc.
  - Build sales file
  - Build other market data files
- Manuals and training
- Automation plan

The focus of work initially should be on the development of a provisional urban land cadastre.

Regarding automation, I visualize use of a rela tional data base management system to link the registers, although other solutions would be workable. Such a system can ensure that data are secure but accessible and that data redun dancies are kept to a minimum. The feasibility of a geographic infor mation system (GIS) should be evaluated.

B. BASIC DATA COLLECTION AND PROCESSING PROCEDURES

Cadastral data collection and processing constitute the most labor intensive and, hence, expen sive aspect of a proper ty tax system. Consequently, manage ment should strive for efficiency and effectiveness. Data management respon sibili ties encompass determining data needs, collection methods, and data storage and retrieval.

1. Data Needs Analysis

As cadastral data collection and maintenance are time consuming and costly, only essential data should be collected and maintained. Essential data elements include those needed in valuation or in support of values, those needed for tax administration (to determine taxability), and those needed by other users of cadastral data, such as territorial planners.

In determining data needs, the State Tax Inspectorate faces two broad issues: What data are required? Are existing data accurate? Early in phase 2, the State Tax Inspectorate should determine data needs and evaluate the sufficiency of existing data for long-term needs. In terms of valuation needs, cadastral records should contain the location, site, and improvement characteristics needed to determine the attractiveness of a property in the marketplace.

2. Describing and Coding Cadastral Information

As data needs are determined, it will be necessary to specify how each individual property characteristic will be described and stored in cadastral records. This will require some analysis and planning if accuracy and consistency are to be achieved. A "description" of a characteristic is a depiction in words (including numbers representing measurements or counts) or a representation in a picture (such as a photograph or sketch). Descriptions or variables can be objective or subjective. They can be qualitative or quantitative. If variables are numerical, they can be continuous (such as a measurement) or discrete (such as a count).

However, narrative descriptions generally are too lengthy for practical storage in a cadastral system. Codes reduce descriptions to a more uniform and manageable size. Codes can be letters, numbers, fewer words, or combinations. They can represent yes-no conditions, and such variables are called binary or "dummy" variables. They also can represent classes, and these are called categorical or dichotomous variables. Variable codes should be designed to cover all possibilities (such as an "all others" category) and to contain no duplications.

3. Form Design

Data collection forms, computer data entry screens, and property record reports should have coordinated designs to increase efficiency, completeness, and accuracy. Data collection forms should be designed so that information can be keyed directly or scanned. This saves time and minimizes errors. The form should be well organized and easy to read. Assigning field numbers to data items and designing data entry screens to correspond to forms makes data entry easier.

4. Data Collection Manual

A data collection manual should be prepared that contains instructions on how to classify property characteristics and assign the proper codes. The manual also should provide instructions on how to complete forms.

5. Processing Source Documents

A modern fiscal cadastre requires basic procedures for processing documents that contain information about changes in ownership, land parcel boundaries, the physical characteris tics of buildings, and in the use of land and buildings. These procedures should be established in phase 1 and refined in phase 2.

a. Ownership (or Occupant) Information : The State T ax Inspectorate should continually acquire ownership or occupant information from legal docu ments, screen them for changes, and update property tax records accordingly. Depend ing on the volume of changes, change information should be acquired daily or weekly. Ideally, the inventory offices (or other legal cadastre office) would automatically submit copies of title change documents to the Tax Inspectorate. Desirably, this information would be transmitted in a computer medium that the Tax Inspectorate could read.

Each title change document should be screened to:

- Identify the property involved in the change;

- Verify the cadastral number (or numbers) or, as neces sary, correct the number or assign a new numb er(s);

- Match the property involved in the change with the same property or properties in current property tax regis ters;

- Determine whether there has been a change in the bound aries of one or more parcels of land (that is, whether there has be a change in a "legal descrip tion");

- If a parcel boundary description has changed, update both the cadastral map and land register, combining or pro-rating re cords to maintain integrity, consid ering wheth er the parcel should be revalued;

- Determine who the new taxpayer is;

- Record the new taxpayer's name and addr ess in the taxpayer register; and

- Note any information related to the sale price and terms in sales records (discussed below).

Promptly updating taxpayer name and address records and legal descriptions smoothes work loads and reduces confusion. Trans actions after the taxable status (or tax lien) date should be made to a working draft of the next year's register.

b. Sales Information : Sales data used in valua tion or ratio studies must be reliable. Information about the proper ty sold, the s ale price, the terms of the sale, and the circum stanc es of the sale must be accurate. Certificates of title and real property transfer returns are the

primary sources of infor mation of sales prices and terms. If the information from these sources is incom plete or questionable, additional efforts to collect and verify infor mation should be made. A party to the sale (the buyer, the seller, the notary, or an agent) is the best source.

It is necessary to determine whether each sale is an arm's -leng th, open-market sale, to verify the price, and to determine whether adjustments are required for movable prop erty included in the sale. This is particularly true for sales of business properties. Sales can be confirmed by mail question naires, telephone inter view, or personal contact.

Sale validation codes should be developed. The codes indicate whether a sale has been determined to be an open - market, arm's -length transfer and, if not, why it was reject ed. All sales should be included in the sales file (discussed below). However, the valuer should be able to select those needed in a particular application.

Secondary sources of information also should be used. These include immovable property agents and brokers and pri vate valu ers. Such sources can provide valuable back ground informa tion helpful in deciding whether certain sales meet the criteria of open-market, arm's-length sale. They also can confirm reported information.

The AURI already has initiated contacts with the Yerevan immova ble property market community. The State Tax Inspectorate should try to link with these contacts.

b. Building Permits : Building permits are a source of essential informa tion about future construction ac tivity. Building permit processing procedures should be developed in phase 2. The State Tax Inspectorate should arrange to get copies of all building permits issued in its jurisdiction. Permits should be tracked by maintaining a log of properties for which permits have been issued. Each tax year, the prop- erties with pending permits should be inspected (see section ???) as near the valua tion date as possible to ensure that they are properly as sessed.

It is good practice to include basic informatio n about building permits in building records (that is, the permit number and date and a note about the nature of the work cov ered by the permit).

c. Taxpayer Returns : Taxpayer returns can be an expedient way of collection information quickly and econom ically, particularly in the early stages of setting up a property tax system. They have been successfully used in initial data collection programs in the Czech Republic and in Slovakia, and they are used on an ongoing basis in Turkey. They also can be used to supple ment convention al field can vasses (discussed next).

6. Administration of Field Inspections

Field inspections are an important aspect of the work of maintaining a modern fiscal cadastre. Field inspections are necessary to ensure that

the information in land and building registers is correct. All plots of land and all buildings should be inspected by the end of phase 2.

There are two types of inspection activi ty: (1) periodic general canvasses of all properties and (2) special inspec tions of properties that (a) were recently sold, (b) were issued a build ing permit, and (c) that are under appeal. Field inspec tions can be two levels of detail: (1) a complete collection or re-collection of data and (2) a verification of data.

Properties should be reinspected regularly to ensure that property characteristics data are accurate. The interval between reinspections should be no longer than four to six years.

Training . The data collection staff should be well-trained in property inspection procedures, in handling data collection forms, and in proper pubic conduct.

Logistics . The logistics of data collection programs involve the movement of staff and data collection forms from office to the field and back in ways that use time wisely and minimize the loss of data.

Data Edits and Audits . The quality of data should be evaluated through record audits and computerized edits. Samples of property record and other forms can be reviewed for complete ness and accuracy. Computerized data should be sub jected to a range of quality checks or edits not available in manual systems. These include missing data checks, validity checks (characters and codes), range edits, and consistency (logical edit) checks. Error and warning messages should be generated as circumstances dictate.

Public Relations . Property owners should be informed about general field canvasses shortly in advance of the in spec tions. The data collection staff should be prepared to answer questions about the purpose of the program.

C. CADASTRAL MAPS

The foundation of a modern cadastral record system is a com plete and up-to-date set of cadastral maps detailing the loca tion, shape, and size of every parcel of land. The com pletion of a first-generation set of cadastral maps should be a major objective of phase 2.

Compiling cadastral maps is analogous to completing a jigsaw puzzle. The puzzle has to be complete before one can be sure that all the pieces are in their proper places and that there are no missing or extra pieces. That is, all land area should be accounted for. No plots of land should be omitted, and no land areas should be counted more than once. Solving the cadastral map puzzle requires that every parcel of land be displayed graphi cally on a map.

1. Cadastral Map Standards

A cadastral map system consists of the base maps on which parcel boundaries are drawn; source data on the location and boundaries of parcels, such as certificates of title, surveys, subdivision plats, and other map work records; the resulting cadastral maps; index maps; and a plat or subdivision index.

A cadastral map should display:

- Boundaries of all parcels
- Parcel identifiers (cadastral numbers)
- Parcel dimensions or areas
- Location and names of streets, highways, alleys, rail roads, rivers, lakes, and so on
- Block and lot numbers and, if scale permits, names and boundaries of subdivisions and plats
- Boundaries of political subdivisions
- Other basic map information including a map number, title block, revision block, legend, map key, north arrow, and keys to adjoining maps
- If available, geographic coordinates

Mousheghian and Soghomonian (1994, section 6.1.1) recommend similar standards.

Maps should be compiled and maintained according to profes sional standards. Maps will be easier to use if lay outs, line work, and symbols are standardized. Map sheets should be of a uniform, convenient size (for example, a half-meter by half-meter). Map materials should be easy to draw on, ensure clear crisp reproduction, and be durable. Maps should be drawn to an appro priate scale. The proper scale is one that allows the largest possible area of land to be dis played on a map sheet while showing the necessary detail. Professional standards suggest the scale for urban areas should be about 1:1,000. In rural areas, the scale ordinarily should be no greater than 1:5,000.

In a strictly legal sense, cadastral maps used for prop erty tax purposes may need only to be accurate as of the assessment date. However, parcels of land can be combined, divided, and sold at any time, and many people need current information about land ownership patterns in order to reduce confusion and to complete transfers. Moreover, contin ually maintaining cadastral maps makes practical administrative sense, because work flows can be smoothed out.

The elements of a modern cadastral map system constitute part of a geographic information system (GIS). Cadas tral data are visualized as a layer of data on base maps that are linked to a geodetic reference frame.

If map data are computerized, maps can be produced of any area of interest and at any desired scale. Moreover, differ ent "layers" of data can be combined and displayed.

When geographic coordinates are displayed on cadastral maps, it is possible to pinpoint the location of each parcel. This informa tion will allow the calcu lation of the distances between parcels and other locations or "value influence cen ters" that have an important bearing on land values and eco nomic obsoles cence factors. Having geographic coordinates in cadastral records enables property tax administra tors to use other spatial data files.

2. Cadastral Map Compilation

The imple mentation plan should include the develop ment and installation of a cadastral num bering system and the prepara tion of cadastral work maps on which cadastral numbers and building numbers are inscribed.

a. Responsibility : The responsibility for compil ing cadastral maps should be given to an experienced mapping organi zation such Armgeodesy (probably under contract with the State T ax Inspectorate. Private mapping contractors also could be considered.

b. Existing Maps : Mousheghian and Soghomonian (1994, page 12) state that the entire territory of Armenia is covered by photogrammetric topographic maps of various scales pro duced by the Insti-tute of Geodesy and Cartography (Armgeodesy). Moreover, there is a uniform systems of rectan gular geo graphic coordinates, which will allow the maps to be linked and which will allow spatial analyses if parcel-level coordinates are computerized.

There are two series of urban maps. Urbanized areas and surrounding territories are mapped at a scale of 1:2,000. Yerevan has 300 of these maps. This series were drawn between 1986 and 1993. The territory covered by these maps totals 109,000 hectares. Local councils and planning institutes possess copies of these maps.

Developed areas within urban areas are mapped at 1:500. This series was drawn between 1986 and 1992. The territory covered by these maps totals 13,500 hectares (or 40 percent of developed territories). Yerevan has 1,200 of these maps. These maps were produced by Armgeodesy for customers such as the Gas Department, the Construction Department, and Public Utility Services. Planning institutes also have copies of the maps.

Other scales in use include 1:5,000, 1:10,000, and 1:25,0 00. Yerevan has seventy 1:5,000 maps. The Yerevan price map is on a 1:25,000 map.

Institutes maintaining map archives include the Geo detical Service of the City of Yerevan (which has the complete series of 1:500 maps in the city), "Yerevanproject," "Armgos project," and "Armcomm unproject." These archives also contain copies of development plans which will be crucially important in delineat ing parcel boundaries.

Map sheets are 50 cm by 50 cm, which is suitable for cadas tral maps. In addition to contours, the maps display building perimeters, building

numbers, and allotment year and month. Maps containing geographic coordinates currently are regarded as secret.

Mousheghian and Soghomonian (1994, page 11) recom mend the 1:2,000 and 1:500 scale maps for cadastral maps, and I agree that they are suitable for urban areas and small agricultural plots.

Mousheghian and Soghomonian (1994, page 13) state that (1) 30,000 additional hectares need to be mapped at 1:500, (2) 1:500 maps covering 14,000 hectares need to be corrected, (3) 1:2,000 maps covering 18,000 hectares need to be corrected, and (4) about 15,000 hectares embracing settlements are gardening plots need to be mapped.

c. Recommended Procedures : Because an urban land cadastre does not now exist, a work ing, provisional cadastre needs to be developed quickly.

In the following discussion, I define a parcel of land as "a contiguous area described in a single description in a deed or as one of a number of lots in a plat; separately owned, either publicly or privately; and capable of being separately conveyed." The primary task in developing the provisional urban land cadas tre is to delineate parcel boundaries provisionally.

The following procedure assumes that a computerized mapping (CAD/CAM) system will not be available. If one were, the proce dure should be modified accordingly.

1. Acquire copies of existing maps. Two sets should be acquired ——one for use in the field and one for fin ished maps.

2. Decide the sequence in which provisional cadastral maps will be produced. The focus should be on en tire blocks containing the mos t valuable land plots and buildings.

3. Assemble available construction plans.

4. Plot provisional parcel boundaries on maps based on information in the construction plans.

5. Where step 4 produces a satisfactory result, send the registration form proposed by the Armenian Urban Re search Insti tute [source?] to adjoining users to con firm the result of step 4 or propose an alterna tive.

6. Where step 4 or step 5 produces an unsatisfactory result (such as when (a) there is an unexplained gap between parcels, (b) boundaries overlap, (c) a con struction plan cannot be located, (d) when there is a substan tial "ille gal" construction), or (e) ad joining users cannot readily agree to the result in step 4), use the proce dure out lined below to produce provisional parcel boundaries.

7. Assign provisional cadastral numbers.

8. Produce finished cadastral maps.

9. Initiate parcel records. Each record should contain the cadastral number, an indication of whether the parcel is vacant or is improved with buildings, the address of any buildings, any measurements that were made or were available, an indication of whether the parcel is regarded as provisional, and any other pertinent information. (A decision will have to be made as to the extent of any building inventory work that would be done at the same time.)

d. Provisional Boundaries: The drawing of provisional boundaries should be legally authorized, but boundaries so drawn should not be treated as legally establishing a parcel's boundaries. (In the United States, maps produced for the fiscal cadastre, which usually is separate from the legal cadastre, commonly have a disclaimer stating that the information is not sufficient to establish legal parcel boundaries.)

The guiding principle is to draw parcel boundaries around (a) every vacant piece of land (such as a park, building site, and the like) and (b) every primary building (such as an apartment block) including the land around auxiliary buildings (such as garages and sheds. A complex of buildings can be on a single parcel. However, it is desirable to avoid having a building straddle two or more parcels.

Parcel boundary lines should be drawn wherever there is an obvious change in land use or occupation, such as between abutting walls of adjoining buildings, fence lines, hedges, and the like.

Many times the proper location of boundaries will not be obvious, such as when:

- There is open space around buildings;
- The widths of street and other rights of way have not been established;
- A building is illegally constructed; and
- It is unknown whether alleys and passage ways are public or private.

In such cases, the [mapping organization] will have to make its best guess as to the location of the parcel boundary. As a general rule, when the land areas on both sides of the boundary are either both publicly owned or used or are both privately owned or used, the boundary should divide the space equally. When one side is privately owned or used and the other side is publicly owned or used, the boundary should be drawn in a way that favors the public's interest.

The initial work of delineating parcel boundaries should be done in the field, using available information on land ownership and use.

Provisional boundaries should be crudely sketched on work maps or prints of aerial photographs.

The provisional cadastral maps should be open for public review and comment. Interested parties should be allowed to present evidence as to where boundaries should be adjusted, provided other interested parties do not object. The Armenian Urban Research Insti tute's recommended temporary land commit tees would be suitable bodies to hear comments and to attempt to resolve differences. Policies and procedures to guide the committees' deliberations should be developed. Reach ing agree ment may be time consuming and may not always be possible without adju dica tion.

D. CADASTRAL NUMBERING SYSTEM

The cadastral numbering system will need to embrace land parcels, buildings, and individual units. The cadastral number ing system should be adopted early in phase 2.

1. Parcel Numbers

Each land parcel should have associated with it a unique identi fication number, which serves as the primary key to records in various registers and files. Common ways of iden tifying parcels such as by their address es, their owners, or some other property characteristic are not acceptable as the primary identi fier because they can be ambigu ous or unwieldy. A cadastral numbering system provides uni form and manageable identifiers. These numbers are used to link parcel infor mation on maps with parcel data in other registers and files.

Cadastral numbers should have legal status. That is, it should be legally suffi cient to identify a parcel only by its cadastral number. Cadas tral numbers should be re quired on sale agreements, other transfer documents, and building per mits.

Cadastral numbers should meet the criterion of *uniqueness*. Uniqueness is a one-to-one relationship between the size and shape of a parcel and its number. It is the most important attribute of the numbering system. Other important characteris tics include (1) permanence ——a number should change only when parcel boundaries change; (2) simplicity (uncomplicated, short, sequential numbers are easier to use); and (3) reference to geographic location. However, the design of the cadastral numbering system will require a com promise; it is impossible to satisfy all of the above criteria equally well.

There are two ways of achieving uniqueness in a cadastral numbering system. One way is to assign a new number to each "new" parcel, or parcels, that results from the combina tion, or split, of "parent" parcels. Existing numbers are "retired" and not assigned to any of the resulting parcels. A record of retired numbers and the parcels associated with them should be maintained for future reference.A second way is to add suffix es to the number of the "parent" identifier for each "child."

Under either approach, new cadastral numbers should be assigned without delay. That is, they should be shortly after a sale is presented to the [legal registry].

The numbering system should identify buildings and sepa rate ly owned units, including condominium units.

Mousheghian and Soghomonian (1994, section 6.2) evalu ate alternative cadastral numbering systems and propose a system consisting of the following elements:

1. A two-digit district code

2. A two-digit sub-district code

3. A three-digit map number for maps in the 1:2,000 series (or the 1:10,000 series in the case of agricultural lands)

4. A two-digit map number for maps in the 1:500 se ries, if applicable (or the 1:5,000 series in the case of agricultural lands)

5. A three-digit ordinal plot number

I concur with this recommendation. The illustra tions contain a two-digit land use code, which I believe should be carried as an element of the land parcel record, not as part of the identifier.

2. Building and Unit Numbers

Cadastral numbering systems must embrace buildings and individual units when such property can be owned independently of the land parcel with which they are associated. Several systems have been devised for numbering buildings. A building number can be appended to the parcel number. Buildings can be assigned independent ordinal numbers. The address system can be used when there are no duplicate street names. A difficul ty with using the address system is that a single building can have more than one postal address. Unit numbers should be a suffix of the build ing number.

As it usually is necessary to tie units, buildings, and parcels together, the first system usually is preferred.

As Armenia already has a building numbering system of the second type and as building numbers are dis played on existing maps, it would be simpler to maintain it and develop a cross-reference to parcel numbers rather than develop an entirely new system.

E. TAXPAYER REGISTER

Another key element of a property tax system is the register that contains the identi fication of the persons (individuals or enterprises)

responsi ble for paying the prop erty tax assessed against their properties.

F. LAND REGISTER

The land register contains records of important location and site character istics such as the following:

- Market area or neighborhood
- Land use
- Parcel size and shape
- Service (utility) and transportation network access
- Zoning, other land-use controls, or other restric tions on development
- Topography, terrain, and soil characteristics
- Lake frontage and the like
- Views——desirable and undesirable
- Surrounding land uses and their influences
- Distances to value influence centers (such as cen tral business district, schools, and shopping--usu ally requires geographic coordinates)

In phase 2, the State Tax Inspectorate should decide the specific location and site characteristics that will be con tained in the land register. The characteristics can vary with property use. In particular, agricultural and urban land records can differ.

As part of its market-monitoring activities, the AURI has been considering which quantitative and qualitative land and building characteristics should be collected. The State Tax Inspectorate should make use of this experience.

Regarding land use, actual land use is determined by obser vation during field inspections. Good valuation practice re quires a decision as to the most economic use of each parcel (the term "highest and best use" or "most probable use" often is used in United States valuation practice). Many mass valuation systems assume the current use will continue indefi-nitely. In many cases this is a reasonable assumption. However, where development and redevelop ment are occurring or are about to occur, such an assumption is not supportable. Informa tion on current use is necessary both for stratifying land and for valuation. In classified property tax systems, information on use is essential to assign parcels to their proper class.

Mousheghian and Soghomonian propose ten land use cate gories for inhabited areas in the draft Land Code.

G. BUILDING REGISTER

The building register contains records of important building and other improve ment characteristics, such as the following:

- Building use
- Architectural design
- Building size (ground floor area or total floor area) and shape
- Number of stories
- Construction quality
- Building materials in major building components (such as foundations, flooring, framing, exterior walls, interior partitions, and roofs)
- Actual age
- "Effective" age or condition
- Basement and attic areas (finished and un finished)
- Garage area and type
- Balcony and similar areas
- Other auxiliary buildings and improvements (such as fencing, paving and swimming pools)
- Number of rooms, bedrooms, and full and half bath rooms (or bathroom fixtures)
- Amenities, such as the number of fireplaces
- Type and coverage of heating and cooling
- Electrical service

In phase 2, the State Tax Inspectorate should decide the specific building characteristics that will be contained in the build ing register. The characteristics can vary with property use.

H. SALES REGISTER

The cadastral record system should contain a sales regis ter. This register contains a record of each sale. The record should contain the cadastral number, sale date, sale price, and other information about the sale, such as financing arrangements and whether movable property was included in the sale. In addition, the record should contain a description of the property that was sold based on information in the land and building registers at the time of the sale and information gained by inspecting the sold property. Each record would contain an analyst's opinion as to the usefulness of the sale in valua tion and in quality assur ance studies.

I. OTHER REGISTERS

When rental properties are sold, information on rental income and expenses should be collected. Mail questionnaires and field visits can be used to collect this information. Properties for which income and expense data are available should be grouped by type to facilitate analysis. A standard ized reporting form facilitates reporting and analysis. Spreadsheet programs can be developed for entering reported figures, adjusting atypical figures, and estimating unreported data.

IV. IMMOVABLE PROPERTY VALUATION

A. OVERVIEW

The successful introduction of value-based taxes on immov able property would require the State Tax Inspectorate to develop the capacity to value all types of taxable land and buildings. Immovable property valuation is both an art and a science. Howev er, basic valua tion procedures can be quickly mas tered.

There are two broad orientations to valuation : single-property valuation and mass valuation. Most pri vate valuers develop the former orienta tion. Because single-property valua tion methods are labor intensive, [the prop erty tax administra tion] will have to rely on mass valua tion.

Valuation treatises organize valuation activi ties into a "valua tion process." Valuers follow this process with each new assignment in single-property valuation. In single-prop erty valuation, the steps are as follows:

1) Define the valuation problem;

2) Make a preliminary analy sis, plan how to solve the prob lem, and select and col lect the neces sary data;

3) Estimate most economic legal use;

4) Estimate land value (if required by the assign ment);

5) Estimate improved prop erty value (if re quired);

6) Reconcile value indica tors and reach a con clusion as to val ue; and

7) Report the conclu sion.

These activ ities are present in mass valua tion, but work is organized differ ently. In mass valuation, work must be highly systemati zed in order to achieve necessary econo mies. Most of the neces sary data reside in the land, building, and sales registers of the fiscal cadastre. Valua tion is accom plished through the devel opment and applica tion of formal valuation models. In doing this, valuers consid er three main types of evi dence: sales prices, incomes realized from rent, and construc tion costs. A number of quality assurance proce dures are employed to ensure data accuracy, evaluate the valuation models, and review value estimates. In mass valua-tion, by using computer assistance and statistical methods, valuers can analyze the effects of more supply and demand factors on prices than can be done using con ventional single-property valuation tech niques. Consequently, mass valua tions can be highly accurate as well as economical.

In immovable property taxation, the first step of the valuation process, problem definition, is covered by legisla tion and regula tions. In this valuation context, the legisla tion should:

1) Specify the property to be valued (all assess able prop erties should be registered in the fiscal cadas tre);

2) Identify the prop erty rights to be valued (usu ally the full set of rights that may be private ly pos sess ed);

3) Establish the date of the valua tion estimate (in the inter ests of tax equity, all property should be valued as of the same date);

4) Identify the value to be estimated (I recommend market value);

5) Identify the use of the valuation (by defini tion, the primary use of the valuations are for immovable proper ty tax administration).

B. MARKET MONITORING AND PRELIMINARY ANALYSES

AURI already has gained valuable experience in market monitoring, and the valuation pilot projects recommended in the next section (1) would extend that experience. As noted above, ongoing mass valuation programs also require analyses preliminary to valuation modeling. These are discussed in later subsec tions.

1. Valuation Pilot Projects

Valuation pilot projects should be of considerable help in deciding which valuation methods to use and in deciding data needs. Outlined below are suggested steps for further valuation pilot projects in Armenia.

a. Selection of Pilot Study Areas : A preliminary step is to select several pilot study areas. The areas should represent dif ferent economic regions of the country. They might include one or more of the follow ing:

- A part of Yerevan containing busi nesses, apartment blocks, family houses, and indus try
- A medium-size city (or parts of the city)
- A small town
- Rural areas different with respect to soil qual ity and closeness to the capital

b. Organization of the Pilot Studies : I believe the pilot studies should be jointly carried out by AURI and the State Tax Inspectorate. I believe that the Tax Inspector ate should have over all responsibility for the studies. Methodology staff should be intimately involved along with AURI staff in each study. Inventory offices should

take the lead in gathering the necessary informa tion. This would require smooth cooperation between the organiza tions involved.

Progress reports should be made to the [working group] and other interested parties.

I believe the pilot studies would require, at a minimum, two to four people with analytical skills (backgrounds in economics or sta tistics would be ideal). In addition, there may be a need for clerical personnel to enter data.

Each analyst should have access to a per sonal computer (PC) with sufficient memory and disk space (desirably a 486; minimally a 386) and equipped with programs for statistical analy sis and report writing. PC software packages for statis tical analysis in clude SPSS (Statis tical Package for the Social Sciences) for Windows ——which I favor because of its ease of use, SAS (Statis tical Analysis System), and NCSS (Number Crunc her Statistical System).

c. Elements of the Pilot Studies : As much as possi ble, the pilot studies should follow common procedures and have a common format. The report of each pilot study should include the elements listed below. The first five elements should be done first, and suggestions for completing them follow. Regard ing element 8, taxes collected under the phase 1 land and proper ty tax systems for each property in a pilot study should be compared with the proper ty taxes that might be collect ed under refined valuation systems. This element obviously should be taken up at the end of the pilot study. Regarding element 9, the proce dures and re-sources used during the pilot studies should be evaluat ed. The purpose of the evalua tions would be to decide the proce dures that should be followed and re sources that would be needed in an opera tional mass valuation system.

1) Description of the Area . The area encompassed by each pilot study should be described. The de scription could, for example, include:

- Population
- Major economi c activities
- Administrative role
- Transportation
- Other factors influencing how attractive the area is for living and working
- Statistics on total present property tax revenue from land and buildings

2) Statistical Overview of Properties . There should be a statistical overview (profile) of the major kinds of proper ties in the area. The kinds of properties that might be identified could include family houses, apart ment buildings, business proper ties (commercial and in-

dustri al), governmen tal and institutional properties, building sites, farms, forests, summer houses, and so forth. For each major type of proper ty, the follow ing should be provided:

- Number of properties
- Average size of land plus some indication of varia tion in land size
- If possible, similar statistics on building size, number of stories, and age of buildings
- If possible, statistics on present property tax revenue
- If possible, statistics on properties paying and not paying present property taxes

3) Typical Properties . A sample of typical or repre sentative properties should be selected. For each major prop erty type represented, such as family houses, the selection could include examples of the following:

- Poor, average, and good location
- Small, average, and large size
- Old, average, and new buildings
- Buildings with poor and good state of mainte nance

Each selected property should be described in detail. The information should include the information needed to calcu late the present property tax. As far as is possi ble, the description also should include infor mation on the main factors that influence market value. If the property is rented, the present rent should be recorded. If possible, the properties would be photographed and located on a por tion of a cadastral map.

4) Data on Sales Prices . There should be a general de scription of immovable property market activity, such as how properties are advertised for sale, the number of brokers working in the area, the number of properties in each major property type listed for sale during the peri od of the study, the numbers of proper ties in each major type that were sold during the period of the study, and the corre sponding numbers of properties for which sale price data could be obtained.

For each property for which sale price information could be collected, the following should be recorded:

- Sale price
- Date of transfer (this is important for two reasons: (1) information collected about the physical charac teristics of land and

buildings should match those on the sale date and (2) if inflation in property values is high, this fact may have to be reflected in the analy sis of sales data)

- A description of the property, including its loca tion; use; land size, shape,and other char acteris tics; and building size, con struction materials, state of mainte nance, and other char acteristics

- Whether the sale included other items than the land buildings (if yes, either an adjustment to the total sale price should be made or the sale should not be used in valuation studies)

- Whether the sale was an "open-market, arm's-length sale" (if any of the following conditions applied, the sale price cannot be assumed to represent the market value of the property: (1) the property was not adver tised for sale on the open market, (2) the sale was between family members or related busi nesses, or (3) either the seller or buyer was under some unusual pressure)

- If the property is rented, the information out lined in 5, below.

5) Data on Rents . An attempt should be made to collect a sample of rental information. For each rental property that is sampled, the following should be collected:

- A description of each rented property or premis es

- The rent rate and the annual rent per unit (apart ment, store, etc.)

- The total rent collected per year

- Annualized expenses paid by the owner to main tain and ser vice the rented property

- Whether the tenant is responsible for any of the ex penses of maintain ing or servicing the rented prop erty

- Whether the rent includes furniture, equipment, etc.

- Whether the rent is an open-market rent or whether it is a regulated rent

- The date the rent amount was agreed to and the year to which the rental and expense informa tion pertains

6) Sources of Basic Information for Valuation . This section should describe and evaluate the sources of, and specific data collected for, the follow ing types of in formation:

- Sales data

- Rental data
- Land descri ptions and maps
- Building descriptions
- Owners

7) Possible methods of valuation .

8) Comparison of tax payments .

9) Procedures and resources needed for valuation .

2. Stratification and Analysis

A preliminary step in mass valua tion is stratification and analysis. Stratification involves classi fying properties accord ing to characteristics that identify a submarket, such as apart ments in a certain quarter of a city. The first step is to specify the property characteristics that (a) may be used to assign both the properties to be valued (subject proper ties) and any com parables (sold properties) to the class of properties that constitutes the sub market being analyzed and (b) affect prop erty value. Such characteristics include current use or most economic use; land -use controls; loca tion or surround ings; land characteris tics; improvement char acteristics; income characteris tics, if any; and date of sale (of com parables).

Another preliminary step is to specify appropriate units of comparison to account differences in the size and charac teristics of the subject and the comparables.

At an early stage in the val uation model specification process (discussed below), the model builder should review the data on the properties that will be used in model calibration. The review should consider the completeness and accuracy of the data. In addition, a profile of property characteristics should be developed. This profile serves to identify the types of properties for which the model will be valid.

Any atypi cal proper ties present two problems. If they are used in model calibra tion, the valua tion model may be s kewed so that will not accurately portray the relationships between property characteristics and proper ty values of typi cal properties. Conversely, a model that is well-specified in terms of typical value relationships will not work well on atypical properties.

3. Time Analyses

When price levels are changing significantly, the effects of those changes on sales prices must be analyzed, and older sales must be adjusted to the price level on the appraisal date. Price-level changes occur for two reasons: (1) general price level changes associated with inflation or deflation and (2) changes in the supply and demand for the type of proper-

ties in question. Four methods for analyzing the effects of time are: paired sales analysis, resales analysis, sales ratio trend analysis, and multiple regression analysis. These methods are outlined in Eckert 1990.

C. VALUATION MODELING

1. Procedural Steps

Mass valuation modeling involves model specification, calibration, and application. These processes may be repeated several times as a model is tested and refined. After an acceptable model has been developed, it is applied to the properties that are to be valued by it, and the model-generated values should undergo review and further refinement.

2. Types of Models

Valuation models vary with the type of evidence used. The best evidence of market value is open-market, arm's-length sales. Models based on such evidence often are called market models. There are two other approaches to value: the income approach and the cost approach. The income approach deserves consideration in the valuation of income-producing property. The cost approach can be used as a fall-back approach when there are few or no sales of the type of property in question.

a. Market or Sales Comparison Models: Mass valuation models based on the sales comparison approach to value provide the most supportable estimates of value. Initially, the models may be quite simple. However, the State Tax Inspectorate should plan to employ more sophisticated models as Armenia's real property markets develop and the volume of available sales increases. The methods used to calibrate the models might begin with spreadsheets and descriptive statistics. Multiple regression analysis can be used when the volume of sales in a model group exceeds 30 or four sales for every independent variable in the model. Similar criteria can be used to evaluate the feasibility of using adaptive estimation procedures.

A general sale comparison model is:

$$V = S_c + ADJ_c \qquad (1)$$

where V is a market value estimate, S_c is the sale price of a comparable property, and ADJ_c is the total value adjustment to the sale price of the comparable for the quantitative and qualitative differences between attributes of the comparable and the subject property.

After preliminary analyses and stratification, the first step in any application of the sales comparison approach is to identify comparable sales. The second step is to specify a model that accounts for the differences in the sales prices of the comparables based on comparability characteristics. The third step is to calibrate the model using one of the accepted calibration techniques. The fourth step is to apply the model to unsold properties. The final steps are to review the performance of the

model and to make any necessary final adjustments to the model or the values produced by the model.

b. Income Models : Simple applications of the income approach may prove useful in the valuation of some types of property. There several techniques for finding the relation ship between current property income and current property value under the heading of the "income approach." The tech niques, therefore, should be used in the valuation of income-producing property when sufficient data are available.

The income approach is based on the pr emise that the value of a property is directly related to the amount, dura tion, and certainty of the income that will be generated by the property. The notion that income receivable in the future always is worth less than an equal amount of money currently in hand (the concept of time preference) underlies all income approach techniques. The degree of time preference can be viewed as a function of four factors: (1) anticipated loss of purchasing power (inflation), (2) loss of liquidity (it can be difficult to sell an income-producing property quickly), (3) the costs of investment or loan management, and (4) risk. These factors are combined to form a capitalization rate . A capitalization rate is the relationship between income and value, as in the formula,

$$R = I/V, \qquad (2)$$

where R is the capitalization rate, I is income, and V is value. If the income from a property is known and the capi talization rate can be determined, one can estimate value by simply rear ranging equation (2), as follows:

$$V = I/R. \qquad (3)$$

Hence, if annual income equals 10,000 and the capitalization rate is 0.16, the value of the property is

$$V = 10,000/0.16 = 62,500.$$

An examination of this example will reveal that for a given amount of income, a higher capitalization rate will result in a lower property value, and vice versa. The greater the risk, inflation, and the like, the greater the capitalization rate.

It should be noted that (3) represents a special, basic capitalization model or formula (technically, it is the formu la for capitalizing an endless level income stream or perpetu ity). The model can be expanded to accommodate such things as finite income streams, variations in the amount of income, and varia tions in components of the capitalization rate. In applying the income approach, the valuer should consider all these things.

There are basically two approaches to the development of capitalization rates: direct sales analysis and indirect meth ods. In direct sales analysis, valuers use formula (2) to compute overall

capitalization rates. The technique re quires sale price and net income data from recently sold income - produc ing properties. In order to use the technique properly, the data must be from properties that are comparable with respect to (1) the discount rate, which is the rate of return required to attract investment in a property; (2) the remain ing economic life of the improvements, which is the remaining period in which the buildings or improvements are expected to contribute to the value of the total property; (3) the income path, which is the expected direction and rate of change in the current or first year's normal net income ; and (4) the percentage of income attributable to the improvements. To achieve the required comparability, properties are strati fied according to such characteristics as property type (for exam ple, apartments, stores, and office buildings), size (for example, number of apartments, rentable area), and location.

After stratification has been completed, calculation of observed overall rates is easy and straightforward. The chief advantages of direct sales analysis are the fact that (1) the rates directly reflect market behavior and (2) the pattern of observed rates provides information as to their reliability. Regarding the latter advantage, if the rates in a stratum cluster around a central value, and if the pattern of rates among strata is consistent with expectations, the rates can be relied upon. On the other hand, if the rate vary greatly or if the pattern is illogical, the rates can be judged unreli able. In addition, the use of direct capitalization avoids the need for the various assumptions about the income stream, remaining economic life, and other factors required in the indirect or "ratio capitalization" techniques.

To summarize, supportable valuations based on the income approach require current data on market rentals, lease provi sions, operating expenses, mortgage interest rates and terms, and investors' expectations regarding desired rates of return on investments, given their assumptions about the pattern and duration of income streams.

c. Cost Models : The cost approach may be use to value buildings (and other improvements). It is based on the premise that the value of a building equals the cost of ac quiring an equally desir able substitute, with the process of acquisition in this case being the production of the sub stitute. The cost ap proach, therefore, begins with the hypo thetical construction of new but otherwise equally functional building on the same site as the subject property. The site is valued as if vacant and available for development at its highest and best use.

The market value of a building is estimated in two main steps. First, the valuer estimates the current costs of con struction. Market value, however, is based on the building in its current condi tion and circumstances. If the current cost of the building is greater than its current market value, the differ ence is termed accrued depreciation or diminished utili ty. The second step, therefore, is for the valuer to estimate the amount of accrued depreciation from all causes.

To summa rize, the five steps of the cost approach are: (1) estimate land value, (2) estimate the current cost of the building, and (3) estimate accrued depreciation, (4) subtract the esti mate of accrued depreciation

from the estimate of current cost, and (5) add the estimate of land value to the estimated depreciat ed cost of the building. This sum repre sents the estimated market value of the property via the cost approach.

3. Considerations by Property Type

The manual ultimately should deal with specific property types, includ ing the following.

a. Agricultural Land Valuation : The manual should deal with agricultural land valuation based on soil productiv ity.

b. Urban Land Valuation : Special attention should be devoted to urban land valuation because accurate land values form the base of an effective mass valuation system. A credible land valuation program requires that land values be updated regu larly to reflect the current market. If the cost approach is used, land values are determined separately and added to estimated building values. In the sales comparison and income approaches, land values are used to allocate the total value between land and improvements.

Urban land is best valued by the sales comparison ap proach. Where sales are inadequate, other techniques must be used. It also is possible to use the opinions of experts to supplement or substitute for vacant land sales. A panel of experts can be polled as to their views as to the values of a sample of parcels (which need not be vacant).

Mass valuation of land involves developing models of per -unit land values through analysis of local sales. These models are documented on land value maps and in tables of land rates and adjustments.

As previously mentioned, preliminary steps in t he mass valuation of urban land are determination of appropriate strata and units of comparison. Appropriate bases for strati fication include "zoning" or use, location or neighborhood, and size of parcel. Stratification ensures that land values will be based on market data for properties subject to similar supply and demand factors. Land in each use or zoning classi fication should be assigned an appropriate unit of comparison to facilitate analy sis. The chosen units should reflect the way in which market participants, investors, and other ap praisers analyze land values. If parcels are fairly uniform in size, the parcel itself might be the unit of comparison. If parcels vary in size, an area measure should be the unit. Street frontage is another frequently used unit of comparison.

Land sales should be expressed as price per unit and plotted on maps. This helps visualize patterns and establish benchmark values. Two methods can be used to establish bench marks: the comparative -unit method and the base-lot method. In the first, the typical unit value is calculated as the median sale price per unit or other representative figure. In the second, the per unit value (often the parcel itself) of a benchmark parcel, which may be real or hypothetical, is estab lished through the sales compar ison approach. In both cases, these benchmark values provide the starting point for estab lishing the individual value estimates of all the parcels in the

stratum. Standard unit values should portray the overall pattern of land values.

Land values per unit tend to vary with size and depth of parcels, and appropriate adjustments should be made. Depth factor tables can be used to further adjust front foot values for varying depths of lots. Usually these tables represent the typical lot depth or average depth for the area and lots which are greater in depth or less must be adjusted accordingly. Thus depth factors are really a size adjustment for land.

c. Condominiums: The manual should deal with the valuation of condominiums (privately owned flats, together with interests in common property).

d. Possessory Interests: The manual should deal with the valuation of possessory interests (private use of state-owned property).

D. REVIEW AND EVALUATION

The initial application of a mass valuation model is straightforward. However, the results of applying computer-generated value estimates should never be used directly to assess property. Each value estimate should be reviewed.

The valuation review process considers data quality, the appropriateness of the valuation model in question, and the success of the calibration of the model. Consistent with the principles of quality assurance, performance reviews should take place at each stage in the model development and application process. Reviews should include pre-reviews, desk reviews, and field reviews. The nature of the valuation program itself and the properties being appraised affect the emphasis that should be given to any particular step in the review process.

Model builders should review models for completeness. That is, the model should take into account the general factors that affect the value of property in the stratum in question. In a similar fashion, the valuer should consider whether any of the properties in the group have special factors that affect their value. This requires an analysis of property characteristics data, as discussed below.

Data on property characteristics should be reviewed with the objectives of detecting possible data errors and "outliers." Outliers are exceptional properties that may skew model calibration or that may be outside the range of properties for which the model is valid. The data review should be most stringent with properties that have recently been sold and that have new improvements or other changes. It is important to determine whether the sale took place before the improvements were made. The appraiser should also consider whether the sale price was consistent with expectations.

An important evaluation tool in the case of market models calibrated by multiple regression analysis is to apply the model to a test (or

"control") group of properties. The test group should not include any of the properties used to develop the model. Most of the test group should have been recently sold, so that the sales prices can be used as a basis for comparison with the appraised values. A ratio study can be used to decide whether model performance is satisfactory.

Valuers, if they are experienced, also can compare model-generated values with the prices ——or range of prices ——for which they would expect the properties to sell. Consis tent or marked discrepancies in the two estimates suggest that further review is warranted, although it must recognized that the valuer's judgment can be faulty. In a similar fashion, if more than one valuation model has been developed, the consis tency in the estimates produced by the models provides a useful gauge.

After the final model is applied, valuers should review each value estimate. If property characteristics data were collected or verified shortly before the model was devel oped and applied, the review can take place in the office. Other wise the review should take place in the field. In any event, some properties should be reviewed in the field to resolve questions about data accuracy and model appropriate ness. Having recent photographs on file or digital images of proper ties o n hand reduces the need for field reviews.

In making the review, the valuer should have reports summa rizing property characteristics and estimated values. It also is helpful if the reports indicate percentage changes in valuations and express values on a per-unit basis. These make it easier to evaluate the consistency of the estimates. Access to the latest data edit reports also can be helpful. Properties with unusual changes should be reviewed more care fully.

Review procedures should be highl y structured and de scribed in a manual. The discretion appraisers have in chang ing model-generated values should be described. Insignificant changes should not be allowed because of the expense of pro cessing them. Reviewers also should document why they over rode model-generated values. Sometimes codes can be designed for this purpose. Reviewers also should initial the records they change so that an audit trail can be maintained.

Review valuers should be trained in the review proce dures. Trainin g exercises can be developed to test whether the reviewers understand the procedures.

V. MOVABLE PROPERTY

The draft Law on Property Tax makes certain classes of movable property taxable. This eventually will require the development of a movable property valuation system as current balance values are believed to represent between 0.5 and 1.0 percent of current market values.

The movable property valuation system might embrace the following elements:

- Enterprise (state and private) registers
- Taxable property returns and instructions
- Movable property registers
- Auditing procedures
- Valuation procedures, including cost indices and depreciation tables

Among the nations that tax movable property are Japan and the United States, and aspects of their movable property valuation systems could be adapted to conditions in Armenia.

VI. TAX ADMINISTRATION

An equitable, legal apportionment of land and property tax obligations is the ultimate objective of a property tax system. The achievement of this objective begins with careful planning and wise use of resources; sufficient data; and a mass valuation program capable of producing accurate, support able valuations. But the process does not stop with valua tion. Exemptions (or tax privileges) must be applied. Tax bills must be calculated. Valuation (or assessment) notices must be issued, and taxpayers must be allowed to review their assessments and appeal them if they desire. Appeals must be processed and final tax bills calculated. Bills must be delivered, and tax payments must be received, properly accounted for, and deposited in the appropriate treasury. Taxpayers must be provided with sufficient information to fulfill their obligations. Their questions must be answered. These are the subjects of this chapter of this manual.

A. EXEMPTION ADMINISTRATION

Exemptions and other relief measures may be enacted out of compas sion for taxpayers whose personal circumstances make it diffi cult for them to pay property taxes, governments may want to subsidize activi ties beneficial to society, and gov ernments may exempt governmental properties on grounds of administrative efficiency. On the other hand, governments need to administer tax exemptions strictly so that the owners of taxable property do not have undue tax burdens. Thus, the State Tax Inspectorate should take steps to ensure that every property or person eligible for an exemption re ceives it and to ensure that only eligible properties and persons re ceive exemptions.

Proper administration of exemptions requires that eligi bility requirements be met. Eligibility criteria may be loosely or tightly drawn. Exemptions with loosely drawn eligibility criteria, although comparatively easy to adminis ter, provide relief to unneedy recipients. Tight ly drawn criteria tend to focus tax relief where it is most needed or desired, but the costs of adminis tration are greater. An ini tial application should be required for most exemptions, and peri odic renew al applications may be desirable. The applica tion may require additional documents or data establish ing eligibility. The applicant (or an authorized official) should be required to sign each application attest ing to the correct ness of the information on the application or that the appli cant is eligible for the exemption. It is not good practice to accept applications without question or verifica tion. This may require field checks to verify that property is being used for exempt purposes. Compassionate exemptions for the elderly and others with a limited ability to pay property taxes should be designed to ensure that properties are not lost due to delinquent taxes because of diminished ability. Sales of exempt properties should be flagged so that exemptions are removed in the next tax year unless the new owner establishes eligibility for the exemption. It is desir able to appraise exempt properties so that governments can estimate the costs of granting exemptions.

A set of exemption codes should be developed. Each type of exemp tion should have a code. The codes can be used to select tax-exempt properties with status changes, properties that need to receive renewal applications, and the like. They also can be used to follow-up non-responses and in general monitor ing activi ties (of exemp tions with finite durations in partic ular). Finally, they can be used to produce statistical reports, apply for grants for payments in lieu of property taxes.

The Armenian government periodically should review the desirability of continuing existing exemptions.

B. APPEAL ADMINISTRATION

Despite the care tax administrators take to ensure accu rate valuations, changes in property characteristics may go undetect ed. Factual errors may go undetected or uncorrected, and judg ment errors can be made. Appeal procedures are de signed to deal with such problems. The appeal process is an integral part of a property tax system. It provides taxpayers opportunities to review their assessments and question their accuracy and fairness. In the property tax, it usually is the tax payer's responsibility to verify the correctness of her or his assessment. Taxpayers do this by reviewing their assess ments and appealing them if they disagree with the property tax administration's judgment. The appeal process should be accessible to all taxpayers.

Informal conferences are an excellent opportunity to in crease taxpayers' understanding of property taxation. They provide opportunities to ensure that records are correct and that appraisals take into account all pertinent factors. They also serve to clarify differences of opinion about property value, which is useful should the property owner decide to file a formal appeal.

The State Tax Inspectorate should ensure that prop er records are maintained during the stages of the appeal pro cess. These responsibilities may include providing admin istrative assistance to appeal bodies, scheduling hearings, communicating with appellants regarding the appeal agency's decision, and ensuring that the decisions are properly re flected in assessment records. It is good practice to develop codes that reflect the origin of a valuation. This is partic ularly important when the administrator does not agree with the appeal agency's decision. A note needs to be made to change the assessment next year. These activities need to be systematized. It also is useful to compile statistics on appeal activity for planning purposes.

C. ROLL PREPARATION, INTERFACE WITH TAX COLLECTION SYSTEM, AND OTHER INTERFACES

1. Roll Preparation

The preparation of assessment or tax rolls (which are extensions of assessment rolls) involves compiling comprehen sive lists of properties, their owners, assessed values, and, in the case of tax rolls, the amount of taxes assessed against the properties. If the data are computerized, record mainte nance is easier, and the roll can be produced quickly and accurately.

Multi-year processing also smoothes work loads and reduc es ambiguities in data. It also makes possible better quality control. Essentially two sets of registers are main tained, a current-year register and a next-year register, which starts out as a copy of the current -year register. Changes in owner ship, changes in legal descriptions, new construction, and the like are made to the next -year registers as they occur rather than being held in abeyance.

If later the Armenian Government decides to assign land and property tax revenues to local authorities, it will be necessary to assign each property to the appropriate tax district (or districts if there are tiers of local authori ties). The usual procedure is to overlay tax district bound aries on cadastral maps or on index maps. The proper tax rate area code is included in each property record. Alter natively, files may be maintained of the parcels in each area. The code identifies a table that lists tax jurisdictions and applicable tax rates.

2. Interface with the Tax Collection System, and Other Interfaces

The property tax system should have links to the tax collec tion system beyond preparation of valuation or tax registers.

In phase 1, a basic billing and collection procedure should be devised. It would cover the following points:

- Distribution of bills
- Payment points--only tax offices?
- Accounting for receipts
- Delinquent tax enforcement procedures

The State Tax Inspectorate has made considerable progress in these areas.

The valuations of properties with delinquent taxes sh ould be reviewed. A pattern of tax delinquencies is evi dence that values are too high. Delinquent taxes assumed by buyers tend to depress sales prices. It is inadvisable to allow owners of tax-delin quent properties to divide those properties.

As it now does, the State Tax Inspectorate should be prepared to make statistical reports on tax receipts for use by the government.

3. Value Coordination

Depending on how responsibility for valuation ultimately is a ssigned, the government may need to establish an agency responsible for the coordination of values or the State Tax Inspectorate may need to coordinate the value estimates it produces with other govern mental uses of property value esti mates.

Of course, values are not static. Hence valuations can quickly become outdated. Hence point estimates of values made for one purpose may not be valid for another purpose. More over, mass valuations made for immovable property taxation may have limited relevance in situations that require detailed analyses.

D. TAXPAYER ASSISTANCE

Successful implementation of the new tax on immovable property requires public acceptance and cooperation. Efforts to secure this acceptance should occur at all levels of the tax administration. Policy makers and tax administrators must communicate effectively with taxpayers. The rationale for the tax, how it is administered, and taxpayers' rights and respon sibilities must be explained. Re cords should be open and availa-ble for public inspection unless confidential informa tion is involved. An accessible, effective appeal system is required. Individual inquiries should be answered. The tax administra tion should demonstrate at every opportunity that the tax is being enforced even -handedly.

For the above reasons, land and property tax administra tion should be viewed as a public service function. The chief service is an equitable assess ment. Taxpayers should feel welcome in the offices of the property tax administration and be reassured that the tax administration is sincerely inter ested in their needs. Many taxpayers will need individual service, whether help with an exemption application, an expla nation of an assessment, or a request for real estate data. Property tax administrators can expect to receive many such requests for information and assistance. Systems and proce dures need to be established to satisfy these requests effec tively and efficiently. They also should anticip ate that some taxpayers will be angry, and the staff should be trained to diffuse or deflect anger and pro vide the service needed.

As the State Tax Inspectorate plans to do, a public information program should be implemented. Its goal would be to encourage voluntary compliance with the new taxes. In addition to the subjects mentioned above, the program would explain taxpayers' rights and responsibilities, including how to ob tain forms, instructions for completing them, sources of required information, and filing deadlines.

The State Tax Inspectorate should bear in mind that they have several publics--homeowners, business people, and govern ment officials. Other tools and techniques are needed, in cluding audio-visual materials, press releases and briefings, and reports. Every member of the tax administra-tion staff should receive training in how to deal with the public and how to respond to questions.

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